

### **REMARKS**

This is intended as a full and complete response to the Office Action dated May 13, 2010, having a shortened statutory period for response extended one month set to expire on September 13, 2010. Please reconsider the claims pending in the application for reasons discussed below.

#### **Claim Rejections under 35 USC § 103**

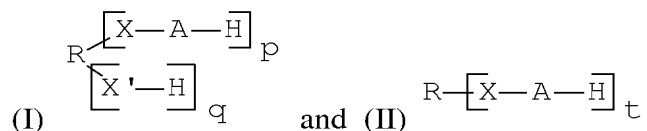
Claims 12-17, 19, 21, 23, and 42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Peerman et al. (EP Pub. 0 106 491 A2) in view of Bahrmann et al. (CA 2,162,083) and when taken with Petrovic et al. (*J. Polym. Sci., Part A: Polym. Chem*, 2000, 38, 4062-4069). The Applicant respectfully responds.

In rejecting claim 12, and the claims dependent thereon, the Examiner acknowledged that Peerman et al. does not teach that the initiator has been alkoxyated to the extent that the initiator obtains a molecular weight of 625. However, the Examiner further asserts that because claim 12 recites that R is a *residue* of a polyol initiator that has been alkoxyated to such a degree, it would imply that R need not comprise the same molecular components as the initiator. The Applicant has in response amended claim 12 to clarify that R comprises polyether groups and has a number average molecular weight of at least about 625. This amendment should clarify that R includes the alkoxyated portion of the initiator, as it would be of very little point to alkoxyate an initiator only to have the alkoxyated segments not included in the formulas (I) and (II) in claim 12. The Applicant has also cancelled claims 16 and 17.

Support for the amendment may be found for example on page 8, line 31 – page 9, line 7 of the application as filed. Additionally, on page 21, lines 4-6, CEI-625 is described as a glycerol initiated EO polyol with a number average molecular weight of 625 which would result in an R group having polyether groups and having a number average molecular weight of at least about 625.

Furthermore, neither Bahrmann nor Petrovic disclose an R group having polyether groups and having a number average molecular weight of at least about 625. Therefore, the

combination of Peerman, Bahrmann and Petrovic fails to show, teach, suggest, or otherwise render obvious a vegetable oil based polyol, comprising



where R is a residue of a polyol, polyamine or aminoalcohol initiator, wherein at least one of the amine or alcohol groups of the initiator has been reacted with an alkoxyating agent so that R comprises polyether groups and has a number average molecular weight of at least about 625, as recited in claim 12. The Applicant respectfully requests the withdrawal of the rejection.

Claims 16-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Peerman et al. (EP Pub. 0 106 491 A2) in view of Bahrmann et al. (CA 2,162,083) and when taken with Petrovic et al. (*J. Polym. Sci., Part A: Polym. Chem.*, 2000, 38, 4062-4069) as applied to claim 12 above, and further in view of Rogier (US Pat. No. 4,216,344). The Applicant respectfully responds.

The Applicant has also cancelled claims 16 and 17. As discussed above, claim 12, from which claim 18 depend, recites subject matter which the combination of Peerman, Bahrmann, and Petrovic fails to show, teach, suggest or otherwise render obvious. Furthermore, Rogier fails to cure the deficiency of the combination of Peerman, Bahrmann, and Petrovic. Therefore, the combination of Peerman, Bahrmann, Petrovic, and Rogier does not show, teach, suggest or otherwise render obvious claim 18. The Applicant respectfully requests the withdrawal of the rejection.

Claims 45, 50, and 51 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Peerman et al. (EP Pub. 0 106 491 A2) in view of Bahrmann et al. (CA 2,162,083) and when taken with Petrovic et al. (*J. Polym. Sci., Part A: Polym. Chem*, 2000, 38, 4062-4069). The Applicant respectfully traverses the rejection.

The Examiner acknowledges that the combination of Peerman, Bahrmann, and Petrovic fails to teach the specific weight ratio of  $A_1$ ,  $A_2$ , and  $A_3$  relative to each other. However, the Examiner asserts that it is common practice in the art to optimize result effective variables such as the weight ratios of  $A_1$ ,  $A_2$ , and  $A_3$  relative to each other. At the same time, the Examiner indicated that it would have been obvious to include a third hydroxyl group as recited by Bahrmann on the molecules of Peerman as additional control of the glass transition of the resulting polyurethane from a change in the density of cross-linking as disclosed by Petrovic.

Thus, extending this chain of thought, it would be obvious to increase the amount of  $A_3$  to be more than that of  $A_2$  or  $A_1$  in order to increase the cross-linking the Examiner refers to. However, this is not the case. The Applicant has found that one is able to obtain acceptable polyurethane foams when the weight ratio of  $A_2$  to  $A_3$  is greater than 5/1, as compared with comparative compositions having weight ratio of  $A_2$  to  $A_3$  of less than 5/1. In support of this statement, the Applicant herewith submits two Declarations under 37 C.F.R. 1.132 describing comparative experiments performed under controlled process conditions (Revised Declaration I and Declaration II). These declarations were first submitted during the prosecution of patent no. 7,615,658 (Application no. 10/551,854) in where the Applicant obtained claims for the alcohol composition of the hydroxymethyl-substituted fatty acids or fatty acid esters on which the polyol of instant claim 45 is based. Examples 1 and 2 of Revised Declaration I illustrate the preparation of a polyol from the claimed monomer alcohol having a diol/triol weight ratio greater than 5/1, as derived from the hydroformylation of soy methyl esters and subsequent hydrogenation. The diol/triol weight ratios of the monomer compositions used to make the polyols will result in the same  $A_2$  to  $A_3$  ratios in the polyols. In Examples 3, 4, and 5, the polyols prepared from the claimed composition are used to prepare flexible polyurethane foams. By comparison, Comparative Experiment CE-1 describes the preparation of a polyol prepared from an alcohol composition having a diol/trio weight ratio less than 5/1, prepared itself from the hydroformylation of linseed oil with subsequent hydrogenation. In Comparative Experiments CE-2, CE-3, CE-4, and CE-5, the comparative polyol is used to prepare comparative polyurethane foams.

From Table 3 of the Declaration, it is seen that the polyurethane foams prepared from the comparative alcohol having a diol/triol weight ratio outside the scope of the claims resulted in polyurethane foams with tin splits and unmeasurable properties, otherwise not suitable for

flexible foam applications. In contrast, the polyurethane foams prepared from the polyol which itself was prepared from the alcohol compositions falling within the scope of the claims were found to be suitable for flexible foam applications.

Declaration II describes the preparation of a monomer alcohol having a diol/triol ratio of 5.56/1, which lies within the scope of the claims but closer to the minimum of 5/1. The new examples involve hydroformylating sunflower oil comprising a mixture of unsaturated fatty acid methyl esters, and then hydrogenating the resulting mixture of formyl-substituted fatty acid methyl esters to form an embodiment of the claimed alcohol composition comprising a mixture of mono-, di-, and tri-hydroxymethyl substituted fatty esters having a diol/triol ratio of 5.56/1. Declaration II clearly shows that, even at a ratio close to the minimum of 5/1, polyurethane foams prepared from the claimed monomer alcohol provide acceptable properties for flexible foam applications. No tin splits or other defects were observed. When the data from the second Declaration are compared with the comparative experiments set forth in the first Declaration, particularly CE-5 as the closest comparison (diol/triol = 3.11/1), the comparison again proves the advantages of the claimed composition. The results are unexpected and not predictable from the cited references. The Applicant respectfully requests the withdrawal of the rejection.

Claims 46-49, and 52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Peerman et al. (EP Pub. 0 106 491 A2) in view of Bahrmann et al. (CA 2,162,083) and when taken with Petrovic et al. (*J. Polym. Sci., Part A: Polym. Chem*, 2000, 38, 4062-4069) as applied to claim 45 above, and further in view of Rogier (US Pat. No. 4,216,344). The Applicant respectfully traverses the rejection.

As discussed above, claim 45, from which claims 46-49, and 52 depend, recites subject matter which the combination of Peerman, Bahrmann, and Petrovic fails to show, teach, suggest or otherwise render obvious. Furthermore, Rogier fails to cure the deficiency of the combination of Peerman, Bahrmann, and Petrovic. Therefore, the combination of Peerman, Bahrmann, Petrovic, and Rogier does not show, teach, suggest or otherwise render obvious claims 46-49, and 52. The Applicant respectfully requests the withdrawal of the rejection.

Having addressed all issues set out in the Office Action, the Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

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Respectfully submitted,

Electronic signature: /Lars Husebo/  
Lars Husebo  
Registration No.: 60,965  
THE DOW CHEMICAL COMPANY  
2040 Dow Center  
Midland, Michigan 48674  
(979) 238-3660